



**West African Ornithological Society  
Société d'Ornithologie de l'Ouest  
Africain**



**Join the WAOS and support  
the future availability of free  
pdfs on this website.**

<http://malimbus.free.fr/member.htm>

If this link does not work, please copy it to your browser and try again.  
If you want to print this pdf, we suggest you begin on the next page (2) to conserve paper.

**Devenez membre de la  
SOOA et soutenez la  
disponibilité future des pdfs  
gratuits sur ce site.**

<http://malimbus.free.fr/adhesion.htm>

Si ce lien ne fonctionne pas, veuillez le copier pour votre navigateur et réessayer.  
Si vous souhaitez imprimer ce pdf, nous vous suggérons de commencer par la page suivante  
(2) pour économiser du papier.

## BIRD SPECIES NUMBERS IN CAMEROON VEGETATION DISTRICTS

by M. Louette

Received 8 October 1982

Revised 1 November 1982

A peculiarity of West Africa is its relatively simple pattern of parallel vegetation belts between the Equator and the Sahara. It gives an opportunity to compare the bird species richness of contiguous vegetation belts in a relatively restricted area. Cameroon is especially well suited for this exercise, and interesting because of its position along and just east of the zoogeographical boundary, running from Mount Cameroon to Lake Chad.

## METHODS

Originally (Louette 1981) I divided Cameroon into nine vegetation districts, according to the authoritative study of Letouzey (1968). For the present purpose they have been regrouped into five (Fig. 1, Roman numerals), because the three original northern vegetation districts were found to be virtually identical in breeding bird composition and because bird species occurring in mangrove cannot easily be separated from those in evergreen forest. The montane district, reflecting "horizontal" diversity only, has been omitted. Using data from my recent Cameroon check-list (Louette, *op. cit.*), I compare the number of proven and probable breeding bird species in each taxonomic-ecological group (*sensu* Moreau 1966) along a hypothetical transect and list them by families (see Table 1). Water birds (Moreau's group A) are excluded, and the data for Hirundinidae are insufficient. For certain districts numbers are probably underestimated, especially forest/savanna mosaic (II) (furthermore, district II is composed of a mixture of districts I and III). The numbers in Table 1 refer to "biological" species; i.e. if, in a particular district, two closely related forms occur allopatrically, only one is scored (most often in district I).

## DISCUSSION

Two facts catch the eye upon consideration of the Table. First, grand totals show that each savanna district (II to V) has approximately the same number of species (196-212), but forest has far more species (320). It is due mainly to the numbers of passerines (group E) with 66-80% more species in forest than in savanna. Second, many families show a steady decrease in species numbers from forest to less humid belts, especially well-marked in fruiteaters (Musophagidae, Bucerotidae, Capitonidae) and insect-eaters (Cuculidae, Apodidae, Campephagidae, Muscicapinae) and most spectacularly in Pycnonotidae and Nectariniidae. The trend is apparent also in Strigidae, Indicatoridae, Picidae, Timaliinae and Estrildidae.

The cause is doubtless ecological, it being widely accepted that there are more niches in evergreen forest than in savanna. Certainly fruit and

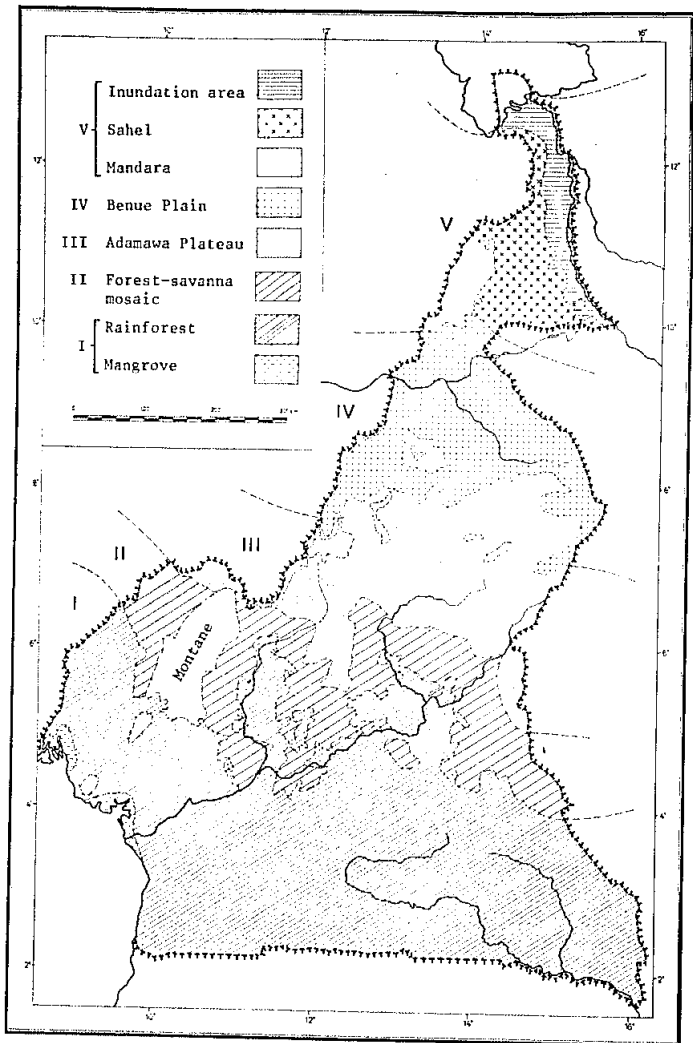


Figure 1 Map of Cameroon showing vegetation districts

Table 1 Numbers of species in five Cameroon districts

(Taxonomic-ecological Groups B-E after Moreau, 1966. Hirundinidae omitted.)

GROUP - Family	DISTRICTS (see Figure 1)					Remarks
	I	II	III	IV	V	
<b>B (predators and scavengers)</b>						
Aegyptiinae	1*	2*	5*	4	5	*including <i>Gypohierax</i>
Accipitridae (other subfamilies)	16	11	12	13	17	
Sagittariidae	0	0	1	1	1	
Falconidae	1	3	2	3	4	<i>Falco peregrinus</i> excluded
Tytonidae	1	1	1	1	1	
Strigidae	10	2*	3*	5	5	*probably underscored
Total	29	19	24	27	33	
<b>C (ground birds)</b>						
Struthionidae	0	0	0	0	1	
Phasianidae	4	5	4*	4	3	*probably = 5
Turnicidae	0	1	1*	1*	2	*insufficiently known
Otididae	0	1	2	2*	4	*probably = 3
Burhinidae	2	1	1	1	2	
Glareolidae	1	3	2	1	2	
Pteroclididae	0	0	0	1	2	
Total	7	11	10	10	16	
<b>D (other non-passerines)</b>						
Columbidae	8	5	6	8	8	
Psittacidae	4	1	2	2	2	
Musophagidae	3	3	3	2	1	
Cuculidae	16	14	12	8	7	<i>Pachyococyx</i> excluded
Caprimulgidae	3	3	3	1	2	insufficient information
Apodidae	7	3	2	2	2	
Coliidae	1	1	1	0	1	
Trogonidae	2	0	0	0	1	
Alcedinidae	10	8	7	6	7	
Meropidae	3	2	3	4	4	
Coraciidae	1	1	3	4	3	
Upupidae	0	1	1	1	1	
Phoeniculidae	2	1	1	2	2	
Bucerotidae	9	5	3	3	3	
Capitonidae	11	9	5	4	4	
Indicatoridae	7	3*	5	4	3	*insufficient information
Picidae	8	8	7	3	3	
Total	95	68	64	54	54	
<b>E (passerines)</b>						
Eurylaimidae	3	0	0	0	0	
Pittidae	1	0	0	0	0	
Alaudidae	0	3	4	4	5	
Motacillidae	2	3	3	1*	1*	*or O?
Campephagidae	4	3	2	2	1	
Pycnonotidae	26	6	4	1	1	
Laniidae	14	8	11	9	9	

cont./

Turdinae	15	6	10	7	8	
Timaliinae	3	3	3	2	1	
Picathartinae	1	0	0	0	0	
Sylviinae (excl. <i>Cisticola</i> )	23	11	9	7	10	
<i>Cisticola</i>	3	7	8	8	8	
<i>Nyctia</i> , <i>Pholidornis</i>	2	0	0	0	0	
Muscicapinae	28	11	12	9	7	
Remizidae	1	1*	1*	1	1	*or 0?
Paridae	1	2	2	1	0	
Certhiidae	0	0	1	1	0	
Nectariniidae	17	12	7	5	5	
Zosteropidae	1	1	1	1	1	
Emberizidae	1	2	3	3	3	
Fringillidae	0	1	3	3	2	
Estrildidae	17	11	16	13	9	
Ploceidae (excl. <i>Vidua</i> )	15	12	12	13	15	
<i>Vidua</i>	1	1	3	4	5	
Sturnidae	4	4	6	6	8	<i>Oncognathus morio</i>
Oriolidae	2	3	1	1	1	excluded
Dicruridae	3	2	1	1	1	
Corvidae	1	1	1	2	2	
<b>Total</b>	<b>189</b>	<b>114</b>	<b>114</b>	<b>105</b>	<b>105</b>	
<b>Grand total</b>	<b>320</b>	<b>212</b>	<b>212</b>	<b>196</b>	<b>208</b>	

nectar resources are most diverse in forest. Some families which favour open habitats decrease from forest (I) to savanna (V): Aegyptiinae, Falconidae, ground birds (group C), Coraciidae, Meropidae, and some passerines (Alaudidae, *Cisticola*, Emberizidae, *Vidua*, Sturnidae). Others (e.g. Phasianidae, Phoeniculidae, Ploceidae), remain virtually constant in number of species throughout the transect. In "other Accipitridae", Coliidae and Trogonidae, the number of species is high at both extremes of the transect and lower in between; but the reason is not apparent. It could be ecological or zoogeographical.

Another example with few mesic-savanna species is the Columbidae. Harrison (1967) considered them an exemplar of repeated and overlapping waves of dispersal, failing to colonise new areas consistently or to occupy all available niches. If that is accepted, it seems that "philopatry" is a factor in the genesis of distribution patterns.

When examining each of the five districts in Cameroon, the following must be emphasized. Forest (district I) contains an ancient avifaunal component with affinities in the Oriental region, something that the savanna lacks (see Snow 1980); and lowland Cameroon forest has more species than Upper Guinea forest. Diamond & Hamilton (1980) and Crowe & Crowe (in press) suggest that this area contained a forest refugium during the Quaternary. Probably, in a dry period, Mount Cameroon functioned as a barrier to the westward spread of Congo forest species. District II suffers from a lack of information and, as mentioned, is a mosaic of its neighbouring districts. District III (the "Ubangi-Uele savanna district" of Chapin, 1932) has some endemics, certainly more than the Upper Guinea savanna west of Cameroon. Fry (1980) has mentioned that there are few endemics west of 23°E in the *Isoberlinia* belt (our district IV), and this one seems particularly unsaturated as to bird species. To the contrary district V, the *Acacia* belt, has a wealth of niches, at first side unsuspected (see Morel & Morel, 1980), accounting for a relatively rich avifauna of 12 species more than district IV.

In conclusion, if western Africa has fewer species than expected, it is for zoogeographical reasons, but additionally for ecological reasons in belts III and decidedly in IV. I propose that the relatively simple structure of this part of the continent, with vegetation belts running parallel to each other, diminishes the number of niches available as a whole and therefore accounts for the lower number of species present.

#### SUMMARY

Cameroon forest has 320 breeding species, and each of four savanna districts, about 200 species. For ecological reasons, several bird families steadily increase in species from south to north, but frugivorous (touracos, barbets, bulbuls) and some insectivores decrease. Probably for zoogeographical reasons, some families are more poorly represented in mesic savannas than in either arid savanna or in rain forest.

#### RESUME

La forêt du Cameroun possède 320 espèces nicheuses et les 4 districts de savane à près 200 espèces chacun. Certaines familles d'oiseaux augmentent régulièrement en espèces du sud vers le nord, mais les frugivores (touracos, barbets, bulbuls) et certains insectivores diminuent, pour des raisons écologiques; d'autres familles sont moins représentées en savane humide qu'en savane sèche ou en forêt sempervirente, ceci probablement pour des raisons zoogéographiques.

#### REFERENCES

- CHAPIN, J.P. (1932) *The Birds of the Belgian Congo*. Part I. Bull. Am. Mus. Nat. Hist. 65: 1-756
- CROWE, T.M. & CROWE, A.A. (in press) Pattern of distribution, diversity and endemism in Afrotropical birds. *J. Zool. (London)*
- DIAMOND, A.W. & HAMILTON, A.C. (1980) The distribution of forest passerine birds and Quaternary climatic change in tropical Africa. *J. Zool. (London)* 191: 379-402
- FRY, C.H. (1980) An analysis of the avifauna of African northern tropical woodlands. *Proc. IV. Pan. Afr. orn. Congr.*: 77-88
- HARRISON, C.J.O. (1967) Apparent zoogeographical dispersal patterns in two avian families. *Bull. Br. Orn. Cl.* 87: 49-56, 63-72
- LETOUZEY, R. (1968) *Etude Phytogéographique du Cameroun*. Encyclopédie Biologique (Paris) 69: 1-511
- LOUETTE, M. (1981) *The Birds of Cameroon. An annotated check-list*. Verhandelingen Koninklijke Academie Brussel (Kl. Wet.) 43 (163): 1-295
- MOREAU, R.E. (1966) *The Bird Faunas of Africa and its Islands*. New York & London: Academic Press
- MOREL, G.J. & MOREL, M.Y. (1980) Structure of an arid tropical bird community. *Proc. IV. Pan-Afr. orn. Congr.*: 125-133
- SNOW, D.W. (1980) The affinities of African Non-Passerine Birds to the Oriental and Palaearctic avifaunas. *Proc. IV. Pan-Afr. orn. Congr.*: 71-76